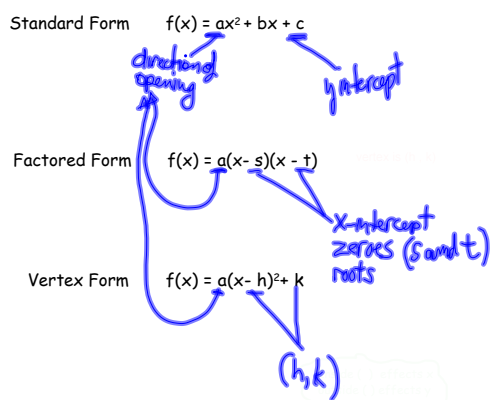


Remember!



1.6 Quadratic Transformations

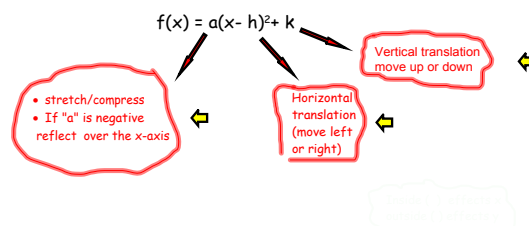
Transformations: are operations performed on functions to change the position or shape of the curves or lines

Putting it all together

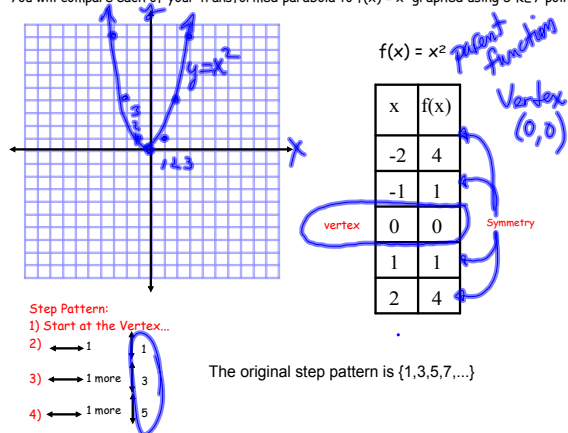
Compared to the graph in standard position $f(x) = x^2$

What did you notice from your investigation?

Vertex Form of a Quadratic



You will compare each of your transformed parabola to $f(x) = x^2$ graphed using 5 KEY points :

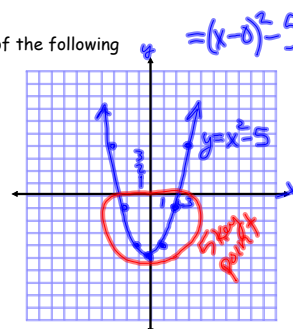


Example: Graph each of the following

a) $f(x) = x^2 - 5$

This is $f(x) = x^2$ moved down 5 units.

Vertex (0, -5)



Example: Graph each of the following

b) $f(x) = (x + 7)^2 + 0$

eq'n

$$f(x) = a(x - h)^2 + k$$

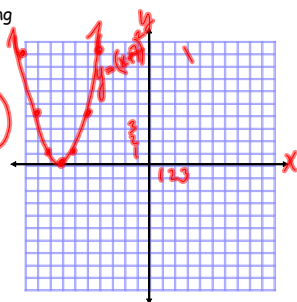
notice to get "+" in the brackets

h is neg so here $h = -7$

(backwards in the brackets)

This is $y = x^2$ moved left 7 units.

Step pattern 1, 3, 5



Example: Graph each of the following

c) $f(x) = -3x^2$

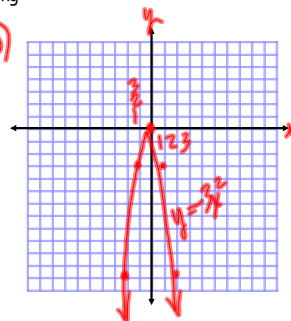
Vertex (0, 0)

This is $f(x) = x^2$ reflected in the x axis
and vertically stretched by 3

The step pattern will always be:

$$a \times \{1, 3, 5, 7, \dots\}$$

Step pattern -3, -9, -15



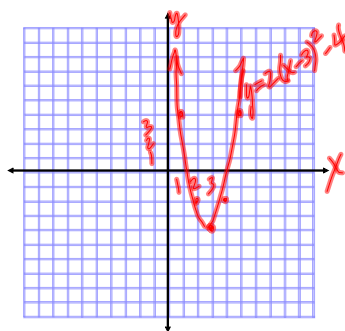
d) $f(x) = 2(x - 3)^2 - 4$

vertex (3, -4)

from the vertex

use the step pattern

2, 6, 10



State the transformation:

- vertical stretch factor of 2
- horizontal shift right 3
- vertical shift down 4

When Stating Transformations

Order matters

1st (multiplying operations)

- Stretching
- Reflecting

2nd (adding/subtracting operations)

- Translations (left/right: up/down)

Stretch before you move
or you'll hurt something!



What if you can't see the parameters a, h or k ie $f(x) = x^2$????

They are still there. You just don't write them!

$$f(x) = 1(x - 0)^2 + 0$$



a h k

$$f(x) = x^2$$

ASSIGNED WK - Chapter 1.5 textbook
P47 # 1, 2(no table), 3, 4, 5, 6, 7 cd, (8 iv) abc